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**Datasheet for the decision
of 13 March 2013**

Case Number: T 1618/10 - 3.5.03

Application Number: 05254150.5

Publication Number: 1615460

IPC: H04Q 7/38, H04B 7/005

Language of the proceedings: EN

Title of invention:
Cell switching and packet combining in a wireless
communication system

Applicant:
Alcatel-Lucent USA Inc.

Opponent:
-

Headword:
Cell switching in a wireless system/ALCATEL-LUCENT

Relevant legal provisions:
EPC Art. 56, 123(2)

Relevant legal provisions (EPC 1973):
-

Keyword:
"Added subject-matter - main request (yes)"
"Inventive step - auxiliary request (yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 1618/10 - 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 13 March 2013

Appellant: Alcatel-Lucent USA Inc.
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Representative: Richardt Patentanwälte GbR
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 25 February 2010
refusing European patent application
No. 05254150.5 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: R. Moufang
Members: T. Snell
B. Noll

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division refusing European patent application No. 05254150.5, with publication number EP-A-1615460.

The refusal was based on the ground that the subject-matter of the claims of a main request and an auxiliary request did not involve an inventive step pursuant to Article 52(1) in combination with Article 56 EPC with respect to the disclosure of the following document:

D1: US-A-2003/169705

II. The present decision also mentions the following documents cited in the examination procedure:

D2: US-A-5987326

D3: EP-A-1313232

D4: EP-A-1349292

D5: EP-A-0566551

D6: US-A-5267261

D7: US-A-2002/0095635

III. The appellant filed a notice of appeal against the above decision. Claims of a new main and a new auxiliary request were subsequently filed together with a statement of grounds of appeal.

IV. In a communication accompanying a summons to oral proceedings the board gave a preliminary opinion that claim 1 of both the main and auxiliary requests did not comply with Article 123(2) EPC.

- V. On 20 February 2013, with a response to the board's communication, the appellant filed claims of new main and auxiliary requests to replace those previously on file.
- VI. Oral proceedings were held on 13 March 2013. At the oral proceedings, after a discussion of the then pending requests with respect to Article 123(2) EPC, the appellant submitted new main and auxiliary requests to replace the existing requests. The appellant requested that the decision under appeal be set aside and a patent granted on the basis of a main request which comprises claims 1 to 3 as filed during the oral proceedings as "Main Request" and claims 4 to 9 of the set of claims filed on 20 February 2013 as main request, or, in the alternative, an auxiliary request which comprises claims 1 to 3 filed during the oral proceedings as "Auxiliary request" and claims 4 to 9 of the set of claims filed on 20 February 2013 as main request.

At the end of the oral proceedings, after due deliberation, the board announced its decision.

- VII. Claim 1 of the **main request** reads as follows:

"A method of communicating with at least a first and a second cell (202, 204) during a handoff from the first cell (202) to the second cell (204), the method comprising transmitting, from a mobile unit, first channel quality information (CQI) encoded with a first cell-specific code such that only the first cell (202) can decode the first CQI,

transmitting, from the mobile unit, second CQI encoded with a second cell-specific code, different than the first cell-specific code, such that only the second cell (204) can decode the second CQI;
receiving, at the mobile unit, information from both the first and second cells (202, 204) for a time interval during which the first and second cells (202, 204) are able to decode the first and second CQI, respectively, wherein the time interval begins when the second cell (204) has successfully decoded a first number of transmissions of said second CQI and ends after the mobile unit has successfully received a preselected number (L) of Transmission Time Intervals from the second cell (204) and stops transmitting said first CQI and after a preselected number (K) of consecutive failures to receive the first CQI from the mobile unit (200) by the first cell (202)."

VIII. Claim 1 of the **auxiliary request** reads as follows:

"A method of communicating with at least a first and a second cell (202, 204) during a handoff from the first cell (202) to the second cell (204), the method comprising transmitting, from a mobile unit, first channel quality information (CQI) encoded with a first cell-specific code such that only the first cell (202) can decode the first CQI,
transmitting, from the mobile unit, second CQI encoded with a second cell-specific code, different than the first cell-specific code, such that only the second cell (204) can decode the second CQI;
receiving, at the mobile unit, information from both the first and second cells (202, 204) for a time interval during which the first and second cells (202,

204) are able to decode the first and second CQI, respectively, wherein the time interval begins when the second cell (204) has successfully decoded a first number of transmissions of said second CQI and ends after the mobile unit has successfully received a preselected number (L) of Transmission Time Intervals from the second cell (204) and stops transmitting said first CQI and when the first cell (202) stops sending data to the mobile unit (200) after a preselected number (K) of consecutive failures to receive the first CQI."

Reasons for the Decision

1. *General*

The present application relates to a method of soft handoff in a cellular network, whereby during handoff a mobile station is in simultaneous communication with both the old cell and the new cell. The invention concerns the determination of the time interval during which the mobile station receives data from both cells.

2. *Main request - claim 1 - Article 123(2) EPC*

2.1 Claim 1 defines the end of the time interval as follows:

"wherein the time interval ... ends after the mobile unit has successfully received a preselected number (L) of Transmission Time Intervals from the second cell (204) and stops transmitting said first CQI [channel quality information] and after a preselected number (K) of consecutive failures to receive the first CQI from the mobile unit (200) by the first cell (202)."

This feature is based on the description at column 5, lines 48-55 (referring to the published application, EP-A-1615460). However, this passage stipulates, *inter alia*, that "The old cell 202 then stops sending data to the mobile station 200 after a preselected number (K) of consecutive failures to receive CQIs from the mobile station 200", which the board understands to mean that the old cell stops sending information (which logically marks the end of the period of simultaneous transmission) as a result of detecting K consecutive failures to receive CQIs. By omitting to specify that the old cell stops sending information following (ie as a result of) K consecutive failures, claim 1 embraces there being an indeterminate period between the point of time at which the second cell detects the K consecutive failures to receive CQIs and the end of the period of soft handoff. This possibility is however not directly and unambiguously derivable from the application as filed, contrary to Article 123(2) EPC.

3. *Auxiliary request - claim 1 - Articles 123(2) and 84 EPC*

3.1 Claim 1 of the auxiliary request is based on paragraph [0018] of the description and Fig. 4. In particular, it includes the feature, in contrast to claim 1 of the main request, that the first cell (202) stops sending data to the mobile unit (200) after a preselected number (K) of consecutive failures to receive the first CQI. Claim 1 therefore complies with Article 123(2) EPC.

3.2 In the board's view claim 1 of the auxiliary request is clear within the meaning of Article 84 EPC.

4. *Auxiliary request - claim 1 - inventive step*

4.1 *Document D1*

The examining division held that document D1 represents the closest prior art. It discloses a handoff method from cell A to cell B in which all embodiments involve the transmission of a sequence of frames comprising a "non-switch frame" in which the mobile station communicates only with cell A, a "switch frame" during which control passes from cell A to cell B, and a "non-switch frame" in which the mobile station only communicates with cell B (cf. Figs. 1, 4, 5 and 6). Each frame comprises 16 timeslots. There is a single statement on page 4, left-hand col., lines 11-12 that the method of the invention is applicable to both soft and hard handoffs, although neither soft nor hard handoff is mentioned elsewhere in the description of the invention.

4.2 The examining division assessed inventive step starting out from the "second embodiment" of D1 (cf. paragraph [0031] and Fig. 5).

In the switch frame of the second embodiment, slot 1 contains a 4-bit CQI ("C/I") for cell A covered by code A. Slots 2 to 16 contain 1-bit channel measurement adjustment information for cell A, whereby slots 2-4 are covered by code B. Due to the use of code B, the serving cell, as well as the target cell, is able to determine the identity of the target cell (cf. paragraph [0033]). It follows that cell A has to be

able to decode transmissions encoded with codes A and B.

4.3 The subject-matter of claim 1 differs from this embodiment in the following respects:

(i) transmitting, from a mobile unit, first channel quality information (CQI) encoded with a first cell-specific code such that only the first cell (202) can decode the first CQI [board's emphasis];

(ii) transmitting, from the mobile unit, second CQI encoded with a second cell-specific code, different than [sic] the first cell-specific code, such that only the second cell (204) can decode the second CQI [board's emphasis];

(iii) receiving, at the mobile unit, information from both the first and second cells (202, 204) for a time interval during which the first and second cells (202, 204) are able to decode the first and second CQI, respectively;

(iv) wherein the time interval begins when the second cell (204) has successfully decoded a first number of transmissions of said second CQI and ends after the mobile unit has successfully received a preselected number (L) of Transmission Time Intervals from the second cell (204) and stops transmitting said first CQI and when the first cell (202) stops sending data to the mobile unit (200) after a preselected number (K) of consecutive failures to receive the first CQI.

- 4.4 Re (i) and (ii): It follows from point 4.2 above that in the second embodiment of D1 at least cell A must be able to decode transmissions encoded with code A and code B. Hence, D1 teaches away from a method in which the first and the second cell can decode only transmissions encoded with their respective cell-specific code, as required by claim 1 of the auxiliary request.
- 4.5 Re (iii) and (iv): Despite the general statement in the description of D1 to "soft handoff", suggesting that during the switch frame both cells A and B might transmit to the mobile station, the board notes that cell B receives no CQI/channel measurement adjustment information with respect to the communication channel between it and the mobile station until the start of the following non-switch frame in which it assumes full control. This appears to cast doubt on whether this particular embodiment is compatible with soft handoff as this information would appear to be necessary for cell B to implement effective power control. However, even if the skilled person would consider transmitting information simultaneously from cell A and cell B during the switch frame, there is no suggestion in D1 that the start and end of the soft handover interval would be determined as claimed in feature (iv). The board also has no evidence that these aspects were well-known to the skilled person based on common general knowledge.
- 4.6 The board concludes that the subject-matter of claim 1 involves an inventive step with respect to the "second embodiment" of D1 (Articles 52(1) and 56 EPC).

4.7 Document D1 discloses three further embodiments:

(a) Fig. 1 and paragraphs [0013] and [0014]: In the first four slots of the switch frame, CQI information of cell B covered by code B is transmitted. This is received by cell A and cell B (cf. page 2, right-hand col., lines 37-42 and 48-49). In the remaining slots, channel measurement adjustment information of cell A is transmitted covered with code A (lines 42-48).

(b) Fig. 4 and paragraph [0030]: Slot 1 contains CQI for cell A covered with code A. Slots 2-4 contain cell B's identity and channel measurement adjustment information of B, covered with a null code (ie one that can be received by all cells; cf. lines 8-11 of paragraph [0030]). The remaining slots have channel measurement adjustment information for cell A covered with code A.

(c) Fig. 6 and paragraph [0032]: Slot 1 contains CQI of cell A. Slots 2, 3 and 4 contain cell B's identity and channel measurement adjustment information, apparently of cell A. The remaining slots (see Fig. 6) contain channel measurement adjustment information of cell A. However, none of the slots are covered with a cell specific code.

It follows, *prima facie*, that none of these embodiments disclose a handoff method in which first and second CQIs are encoded with cell-specific codes of first and second cells, respectively, such that only the first cell can decode the first CQI and only the second cell can decode the second CQI (features (i) and (ii) referred to above), or in which the soft handoff

interval is determined as per step (iv) referred to above. The board concludes that these embodiments are not any more relevant than the second embodiment.

4.8 *Other documents*

None of the other documents D2 to D7 cited in the examination procedure discloses a time interval for soft handoff defined in accordance with feature (iv) referred to above. Hence, in the board's view these documents are not relevant to inventive step in respect of claim 1 of the auxiliary request.

5. *Conclusion*

As regards the auxiliary request, the ground for refusing the application has been overcome. The decision of the examining division is therefore set aside.

However, the board notes that claim 1 of the auxiliary request has been substantially amended as compared with claim 1 as originally filed and includes features taken from the description. It is therefore possible that these features have not been searched. The board has also not examined the dependent claims. The case is therefore remitted to the department of first instance for examination to be resumed (Article 111(1) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution on the basis of the auxiliary request submitted during oral proceedings, comprising:

claims 1 to 3 filed during the oral proceedings as "Auxiliary request" and claims 4 to 9 of the set of claims filed on 20 February 2013 as main request.

The Registrar:

The Chairman:

G. Rauh

R. Moufang